

Automatically Adding Seam Allowance to Cloth Pattern

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1. Introduction

Various methods have been proposed for novice users to design their own garments using computers recently [Igarashi and Hughes 2002; Turouin et al. 2007]. These systems automatically generate a 2D cloth pattern from user input and the user can create a real garment by sewing the pattern together. To sew a real fabric, one also needs to leave an appropriate seam allowance when cutting the two-dimensional (2D) pattern. Difference seam allowances result in different look of the resulting garment [Hu et al. 1997], so appropriate design of seam allowance is very important. However, traditional computational pattern generation methods did not automatically generate seam allowances mainly because the target users were expert users and they prefer to manually add seam allowances. However, it is difficult for a novice user to add appropriate seam allowance manually and it is desirable that the system automatically create cloth pattern that takes seam allowance into account.

Naïve approach is to generate seam allowance of equal width around the pattern (Figure 1a). However, it can cause problems in actual sewing as shown in Figure 1b. In this case, inappropriate seam allowance leaves loose end in the final garment because zigzag stitch cannot hold the folded part. To obtain a professional looking result, one needs to consider the geometry of cloth pattern after folding at the seam lines Figure 1c,d.

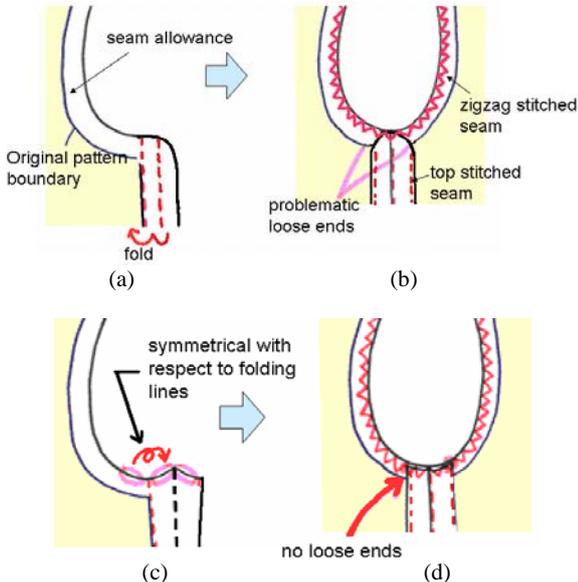


Figure 1: An Example of problematic cases (sleeve placket).

2. Implementation

The current system supports four seam types as shown in Table 1: lap-felled seam, top stitched seam, French seam and zigzag stitched seam. As a default, the system creates a seam allowance with equal width around the cloth pattern. We set the width of seam allowance to 7mm for lap-felled seam and zigzag stitched

seam and to 14mm for lap-felled seam, top stitched seam and French seam as suggested by a professional designer. To compute the shape of seam allowance, the system first computes a distance field around the cloth pattern and then traces its iso-contour of the field. We compute distance field at discrete grid points and then traces the iso-contour using marching square method.

Special treatment is applied at the corner of the cloth pattern where curved seam and straight seam meets. In this case, straight seam is folded first and then curve seam is finished by zigzag stitches (this is because it is typically difficult to fold curved seams). For each such a corner, the system sets the boundary shape of the seam allowance along the curved seams (zigzag stitch) so that that it exactly matches after folding at the straight seams (Figure 1).

Table 1: types of seam allowance

types of seam allowance	illustration	seam allowance on a 3D model	seam allowance on a 2D pattern
lap-felled seam			
top stitched seam			
French seam			
zigzag stitched seam			

References

IGARASHI, T., AND HUGHES, J. F. 2002. Clothing manipulation. In Proc. of 15th Annual Symposium on User Interface Software and Technology (ACM UIST 2002), 91-100, 2002.

TURQUIN, E., WITHER, J., BOISSIEUX, L., CANI, M.-P., AND HUGHES, J. A sketch-based interface for clothing virtual characters. IEEE Computer Graphics & Applications, 27(1), 72-81, 2007.

Hu, J., Chung, S., Lo, M.-T. Effect of seams on fabric drape. International Journal of Clothing Science and Technology, 9(3), 220-227, 1997.